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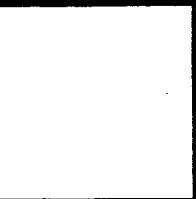
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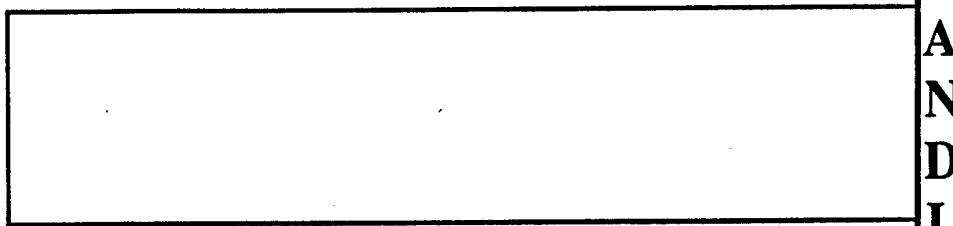
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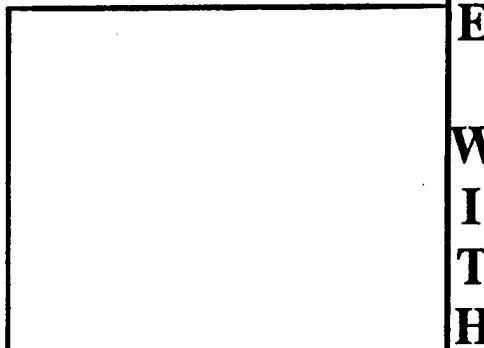
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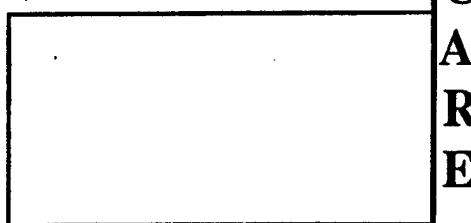
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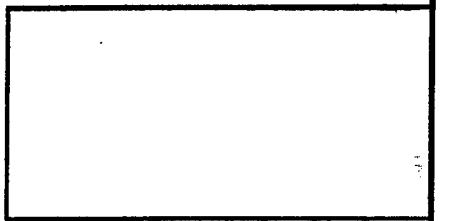
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APPENDIX 33
IFMR - TG INTERFACE
FINAL SOFTWARE REPORT
DATA ITEM NO. A005

INTEGRATED ELECTRONIC WARFARE SYSTEM
ADVANCED DEVELOPMENT MODEL (ADM)

PREPARED FOR:

NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA

CONTRACT N62269-75-C-0070

RAYTHEON

ELECTROMAGNETIC
SYSTEMS DIVISION

1 OCTOBER 1977

APPENDIX 33

IFM RECEIVER/ TECHNIQUES GENERATOR INTERFACE
FINAL SOFTWARE REPORT

DATA ITEM A005

INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No.   N62269-75-C-0070

Prepared for:

Naval Air Development Center
Warminister, Pennsylvania

Prepared by:

RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

TYPE OF SPEC

Interface Control Document

TITLE OF SPEC

IFMR/TG ICD

FUNCTION	APPROVED	DATE	FUNCTION	APPROVED	DATE
WRITER	D. Bailey				
	J.E. Malley	5/25/70			

REVISIONS

CHK	DESCRIPTION	REV	CHK	DESCRIPTION	REV

REVISION																									
SHEET NO.																									
REV STATUS OF SHEETS	REVISION																								
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IFMR/TG INTERFACE
INTERFACE CONTROL UNIT

1.0   SCOPE

This document shall describe the interface between the IFMR (IIU) and the TECHNIQUES GENERATOR. The functional as well as the detailed physical requirements shall be included in this document.

2.0   APPLICABLE DOCUMENTS

IEWS ICD 53959-NK-1400

IEWS ICD 53959-DB-1011

3.0   REQUIREMENTS

An interface shall be established between the IFMR (IIU) and the Techniques Generator to enable the transfer of VCO RF signals and RF switch control lines. The Techniques Generator also communicates with IFMR via the Parameter Encoder on the IFMR BUS, see ICD 53959-DB-1011. The IFMR /TG interface shall be organized as shown in Figure 1.

3.2   PERFORMANCE REQUIREMENTS

3.2.1   IFMR Timing

Each VCO set on process shall require less than 3 μsec of the IFMR measurement time. The control timing shall be as shown in Figure 2.

3.3   DATA STRUCTURE

The IFMR/TG interface, as shown in Figure 3, shall consist of:

2 VCO RF lines

3 RF switch control lines

VCO 01

VCO 02

BLANK

BLANK ⎍ γ_1

VCO( ) γ_2

FREQ γ_3

VCORF( ) SAMPLE

γ_1 1 μsec

γ_2 .5 μsec

γ_3 .35 μsec

FIGURE 2 TIMING

IFMR			TG
	1	BLANK +	
	2	BLANK -	
	3	VCO1 +	
	4	VCO1 -	
	5	VCO2 +	
	6	VCO2 -	

FROM ANTENNA

A

TO IFMR ← 0

RF SWITCH 1

B

IFMR MODIFICATION

C

RF SWITCH 2

D

← VCO1 RF FROM TG
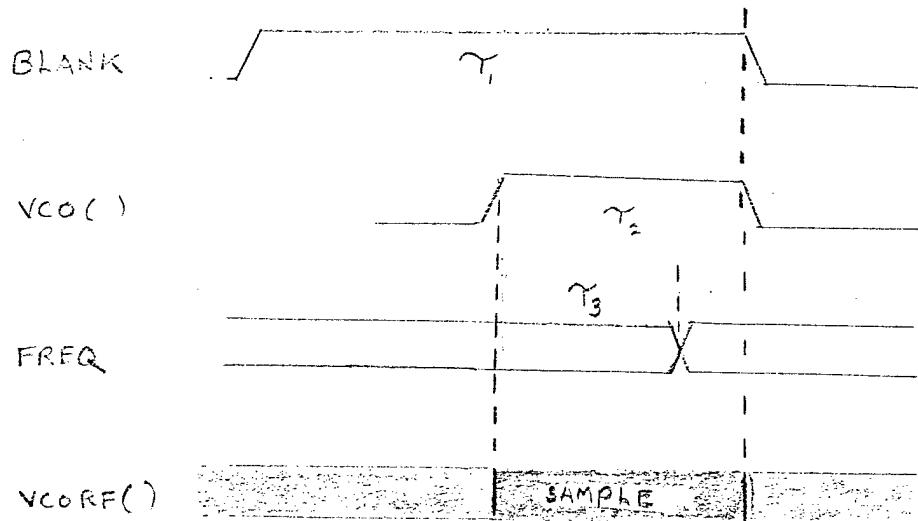
← VCO2 RF FROM TG
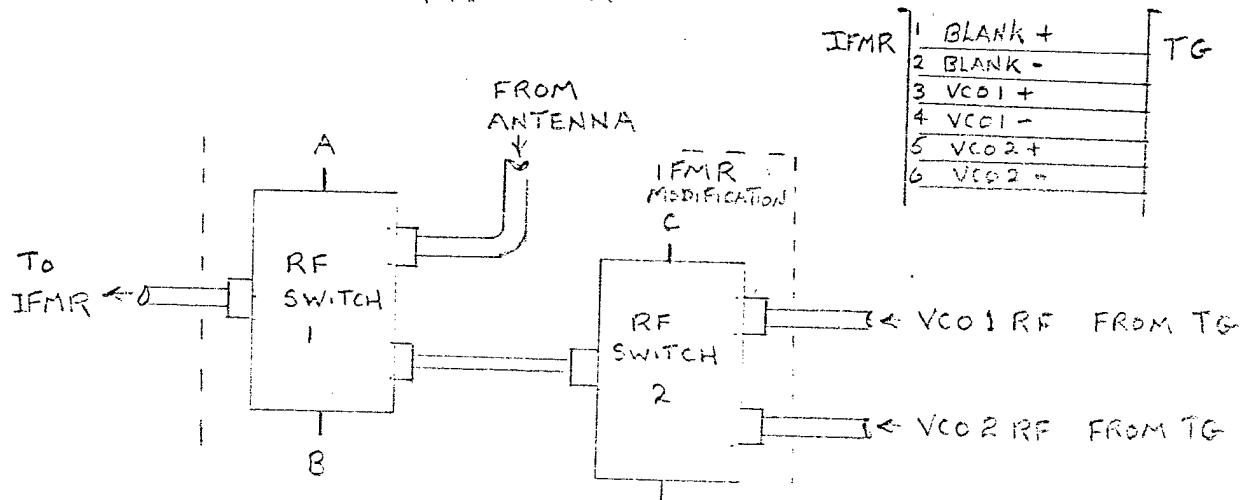
	A	B	C	D
ANT	1	0	X	X
BLANK	0	1	0	0
VCO1	0	1	1	0
VCO2	0	1	0	1

FIGURE 3 IFMR/TG INTERFACE

TERMINATION NETWORK
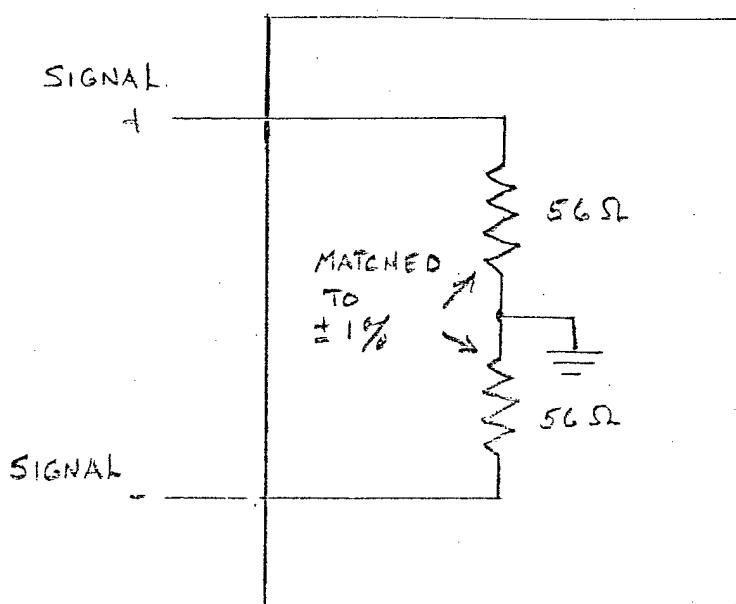
FIGURE 4 IFMR TERMINATION
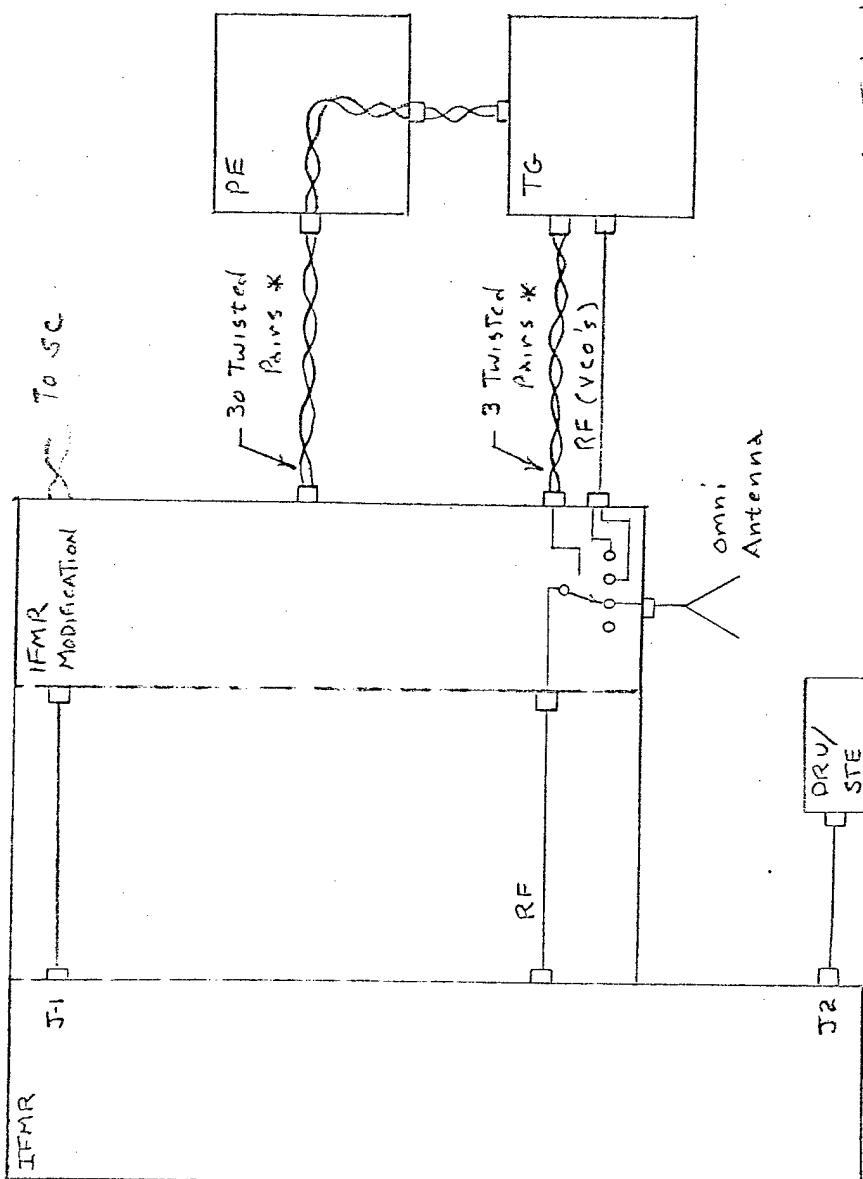
FIGURE 1   IFMR / TG INTERFACE

* note : # 24 AWG
$Z_0 = 110\Omega \pm 10\%$

3.4   DESIGN REQUIREMENTS

3.4.1   Line Drivers/Line Receivers

All line drivers and line receivers shall incorporate SN75110 and SN75107A type devices respectively. The IFMR output shall be terminated on both ends with the termination network specified in Figure 4.

3.4.2   Interconnecting Transmission Lines

All interconnection cables used for this interface shall utilize twisted pair. The characteristic impedance shall be $110\Omega \pm 5\%$. A termination plug shall be provided which is a matched pair ($\pm 1\%$) of 56 ohm resistors for each signal and its return as shown in Figure 4.

3.4.3   Interface Signal Definition

Figure 3 provides the interface signals between the IFM and the Techniques Generator. Signals VCO 00+ and VCO 00- are the signal and the return respectively.

BLANK - a logic signal generated prior to the transmission of VCO RF which inhibits RF inputs to the IFMR.

VCO - 1 - A logic signal which selects VCO1 as the RF source for IFMR frequency measurements.

VCO - 2 - A logic signal which selects VCO2 as the RF source for IFMR frequency measurements.

VCO - 1 RF - An RF signal sent to the IFMR for frequency measurement.

VCO - 2 RF - An RF signal sent to the IFMR , for frequency measurement.